

The Idea of a Carbon Tax

Utah Climate Policy Symposium

April 24, 2007


Gary Bryner

☛ Purpose of a carbon tax:

- Reduce carbon emissions from energy and other sources by raising price of fuel or emissions
- Raise revenue for clean energy or other goals
- Internalize costs that have been externalized; produce more efficient markets



Form:

- A carbon tax could be placed on the consumption of carbon in any form
 - Amount of fuel used
 - CO2 Emissions
 - Fossil fuel content of motor vehicle fuel
 - National or state/local
- 

Estimates of the social cost of carbon

- Intergovernmental Panel on Climate Change 2007 report on net economic costs of damages from climate change
 - Average value of \$43/ton of carbon (\$12/ton of CO₂)
 - Survey of 100 studies: ranged from -\$10/tC (-\$3/tCO₂) to \$350/tC (\$95/tCO₂)
 - Great differences in assumptions
 - Areas with high sensitive to climate change will see higher costs than global average



Impact on prices


- One study suggested that a tax of \$100/ton of carbon would translate into the following price increases:

Gasoline:	\$0.25/gallon
Crude oil:	\$12/barrel
Coal:	\$65/ton
Natural gas:	\$1.50/1000scf
Electricity from coal	2.2 cents/kWh
Electricity from natural gas	1.0 cent/kWh

Carbon taxes in place

- In Nov 2006, residents of Boulder CO voted for a carbon tax, based on number of kWh of electricity consumers use
 - the tax is estimated to add about \$16/year to the average homeowner's bill and \$46/year for businesses
 - Revenues, expected to reach \$6.7 million by 2012, to be used to fund the city's climate action plan that includes energy efficiency, renewable sources, and reduced vehicle miles traveled

- 
- ☛ In 1991, Sweden enacted a carbon tax of \$100/ton of CO₂ released on the use of oil, coal, natural gas, liquefied petroleum gas, petroleum, and aviation fuel used in domestic travel.
 - Industrial users paid 25-50% the rate
 - Commercial horticulture, mining, manufacturing, pulp and paper and some other industries were exempted
 - ☛ In 1997 the rate was raised to \$150/ton
- 

- 
- ☛ In 1991, Norway enacted a carbon tax that averaged \$21/ton of CO₂ released
 - No taxes on air transportation, fishing, and a few other industries
 - Taxes ranged from \$10-51/ton CO₂
 - Highest for gasoline
 - ☛ Finland and the Netherlands also have a carbon tax

✓ Proposed carbon taxes

■ 1993: Clinton Btu tax

- Based on the heat content or Btu of the particular fuel
- Imposed on coal, natural gas, liquified petroleum gases, natural gasoline, nuclear-generated electricity, hydro-electricity, and imported electricity
- Base rate of 25.7 cents per million Btus
- An additional 34.2 cents p/MBtu levied on refined petroleum products, a total of 59.9 cents.
- Congress enacted a "Transportation Fuels Tax" that imposed an average tax of 13.81 cents per gallon on gasoline, diesel, and special motor fuels (17.1 cents per gallon on motorboats and 0.1 cents on commercial aviation fuel) and exempted home heating oil, gas and diesel used on farms, off-highway use)



☛ 1991

- EU carbon tax would begin at \$3.00/barrel of oil (or its equivalent) and increase one dollar a year until it reaches \$10.00 a year much impact globally.

☛ 2005

- New Zealand

- \$11 NZ/ton of carbon on electricity, oil, and gasoline

☛ 2007

- Many economists favor; industry groups and environmentalists split
- Most members of Congress are opposed
- Rep Pete Stark, D CA, proposing \$25/tC
- Sen. Chris Dodd, presidential campaign platform

The Debate: Carbon Taxes vs Cap-and-Trade

Carbon taxes

- Simpler to design and implement; easier to understand and explain; can be put in place more quickly; less likelihood of cheating
- Predictability in energy prices
- Can address more sectors of the economy
- Creates a revenue stream that can be used to reduce other taxes or fund energy efficiency and renewables.

Cap and trade

- Political opposition to raising taxes; less politically visible
- Cap-and-trade programs like acid rain have been successful
- If accurately set, cap ensures environmental protection goals are achieved; carbon tax may not achieve goal
- Can be integrated with international cap-and-trade programs
- Market sets price of carbon, channels resources to projects more efficiently

Sources

- Carbon Tax Center, <http://www.carbontax.org/>
- Chameides, William and Michael Oppenheimer, 2007. "Carbon trading over taxes." *Science* vol 315 (March 23): 1670.
- Eilperin, Judith and Steven Mufson, 2007. "Tax on Carbon Emissions Gains Support," *Washington Post* (April 1), A5.
- Global Policy Forum, "Energy Taxes,"
<http://www.globalpolicy.org/socecon/ghotax/carbon/index.htm>
- Guardian, 2005. "New Zealand first to levy carbon tax," (May 5)
<http://www.guardian.co.uk/climatechange/story/0,12374,1476775,00.html>
- Intergovernmental Panel on Climate Change, 2007. "Climate Change 2007: Impacts, Adaptation and Vulnerability"
<http://www.ipcc.ch/SPM13apr07.pdf>



Kelley, Katie, 2006. "City Approves 'Carbon Tax' In Effort to Reduce Gas Emissions," *The New York Times* (November 18).

Socolow, Robert, 2005. "Avoiding Dangerous Climate Change: A Scientific Symposium on Stabilisation of Greenhouse Gases," Exeter, United Kingdom (February 3).

<http://www.stabilisation2005.com/day3/Socolow.pdf>

Statistics Norway, 2002. "Greenhouse Gas Emissions in Norway: Do Carbon Taxes Work?"

<http://www.ssb.no/publikasjoner/DP/pdf/dp337.pdf>

TED Case Studies, US BTU Tax,

<http://www.american.edu/TED/usbtutax.htm>

TED Case Studies, EC Carbon Tax,

<http://www.american.edu/ted/eccarbon.htm>

